# The influence of political leaders on climate change attitudes

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## ARTICLE INFO

## ABSTRACT

Is public opinion on global climate change stable, with voters holding deeply rooted attitudes that guide them to consistent policy positions? Or is public opinion malleable, with voters adjusting their environmental positions when they learn about the positions of political leaders? To explore whether leaders can influence mass opinion on climate change, we conduct a pair of survey experiments in Australia. Emissions trading plans and renewable energy targets have been central issues in Australian politics over the last decade, with the members of the major parties deeply polarized on these issues. Our experiments reveal that survey respondents take different positions on climate change policy when they learn what positions leaders hold. When respondents learn that leaders take divergent positions on addressing climate change, they become more polarized along party lines. But when leaders converge on a policy proposal, they also bring those who follow them into closer agreement, providing evidence that partisan polarization at the mass level can be overcome when leaders come together on environmental policies.

## 1. Introduction

Parker et al. (2015, 435) maintain that '[W]hen confronting complex global problems, such as the climate change challenge, in which the stakes are high and solutions can be blocked by collective action problems, leadership is essential. Leadership can make a decisive difference by providing a model others may want to emulate…' However, leadership has the potential not only to unite, but also divide public opinion over issues such as climate change. Where there is an absence of political consensus within countries, the implementation of policy to effectively address climate change is bound to falter. In many countries, including the USA (e.g. Wood and Vedlitz, 2007; Jacques et al., 2008; McCright, 2010; McCright and Dunlap, 2011; Hamilton, 2011; Hamilton et al., 2015), Great Britain (e.g. Poortinga et al., 2006), Australia (e.g. Tranter, 2011, 2014, 2017; Fielding et al., 2012) and elsewhere (Tranter and Booth, 2015), deep political divisions exist over the veracity of anthropogenic climate change. In the United States, for example, Dunlap (2014, 2) argues that conservative political leaders contribute to 'distrust in climate science and other environmental sciences, and environmental scepticism in general, among lay conservatives who take their cues from trusted political leaders'.

We are particularly interested in the influence political leaders have upon their constituents in relation to climate change. Lewis-Beck et al. (2011, 166) argue that political leaders can influence their respective party identifiers by providing 'cues' that help their followers negotiate

complex political issues. Yet as Gilens and Murakawa (2002, 43) point out, 'while elite cues can provide an efficient shortcut to political decision making, the extent to which they are used and their effectiveness as a substitute for substantive knowledge remain unclear.' To our knowledge, the nature of this political leader-follower relationship has not been elucidated when it comes to climate change. We seek to address this issue by considering the Australian case, as it offers a unique opportunity to empirically examine the influence of national political leaders upon partisan attitudes on climate change.

In Australia, conservative politicians (Fielding et al., 2012) and conservative political candidates (Tranter, 2013) are far less likely than progressive politicians to agree that anthropogenic climate change is occurring, or that strong action should be taken to address climate change. Fielding et al. (2012) surveyed Australian politicians to examine the lack of political consensus over climate change. They found political affiliation strongly differentiates climate change beliefs, and that Labor and Greens politicians are far closer to the scientific consensus position on anthropogenic climate change than are conservative Liberal or National party politicians. Tranter (2011, 2013) argued that political leaders influence the attitudes of their respective partisans when it comes to environmental issues, particularly in relation to global warming and climate change. Analysing survey data from Australian political candidates and voters, he found that positive evaluations of national Labor leaders were associated with greater concern over global warming, while positive evaluations of conservative coalition leaders

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were negatively associated with global warming attitudes (Tranter, 2013).

Yet neither Fielding et al. (2012) nor Tranter (2011, 2013) were able to demonstrate a causal relationship, that leaders actually influence voter attitudes on climate change. While their findings are important for understanding polarization on climate change, Fielding et al.s' (2012) study was limited to an assessment of *politicians'* attitudes toward climate change. Further, although Tranter (2013) found associations between leader evaluations and climate change attitudes, and posits an association between political leaders and partisan attitudes, his research based upon cross sectional survey data could not demonstrate a causal relationship between leader cues and public attitudes. Our research constitutes an attempt to address this gap in the literature.

Why is public opinion on climate change so often polarized along party lines? Is the divide created by deeply rooted and unwavering divisions between groups of voters who take divergent positions, and then chose to support leaders who match their views (thus giving strategic politicians an incentive to go where the votes are)? Or is public opinion on the environment much more malleable, with voters looking to elected officials to help inform their policy choices? In other words, do leaders respond to voter demands when crafting their party platforms, or, when it comes to addressing climate change, do voters follow their leaders?

If leaders simply respond to divisions between groups of voters, then voter sentiment on environmental policy should be quite static. Members of major parties will hold divergent views and will not shift their positions when they learn about where party leaders stand. The congruence between mass and elite opinion will come as a result of politicians courting voters, according to the logic laid out in Downs' (1957) classic account of electoral incentives or more recent work such as Loewen and Rubenson (2011). Voting blocs will be immovable objects, resisting the force of political rhetoric and calcifying the party divide. In this state of the world, policy gridlock will be likely if voters are inherently divided on the environment and neither party has complete control of government.

If, by contrast, voters go along with their party leaders on the complex issue of climate change, mass political behavior will follow a markedly different pattern and the prospects for policymaking will be significantly altered. In this case, the congruence between voter and elite opinion comes because voters adjust their positions to leadership cues (Abramowitz, 1978; Zaller, 1992; Gabel and Scheve, 2007; Lenz, 2012; Minozzi et al., 2015). When voters learn where party leaders stand on an issue, many will adjust their own positions, exhibiting the behavior that Broockman and Butler (2017, forthcoming) reveal in their recent field experiment. Elected officials will have the ability to pull their voting blocs away from each other when leaders of the major parties diverge in their policy positions, but could also bring the electorate together on environmental policy solutions when there is an elite consensus. This could lead to either gridlock or compromise, depending on the decisions of political leaders.

To test whether or not voters will follow leaders in the realm of global climate change, we conduct two survey experiments in Australia. We implement these in the Australian Survey of Social Attitudes (AuSSA), a nationally representative sample administered in four waves from late 2015 through early 2016 (Blunsdon, 2016). By randomly assigning survey respondents either to receive cues about the positions of party leaders or not, we can credibly identify the causal impact of leadership cues (for an elucidation of the survey experimental approach, see Schuman and Bobo, 1988; Sniderman and Grob, 1996). We turn to Australia because of the unique opportunities created by the environmental positions held by top leaders in the right-leaning "Coalition" of the Liberal and National Parties. Former Prime Minister Tony Abbott opposed many actions to address the impact of climate change, while current Prime Minister Malcom Turnbull–a member of the same party, who replaced Abbott through an internal party vote between elections–supported many of these policies. In one experiment, we test the impact of a cue about Abbott's positions that diverged from the policy favored by the leader of the opposition Labor Party, Bill Shorten. The other experiment explores the effect of a consensus cue, informing poll respondents that Turnbull and Shorten both espoused the same position.

Through both approaches, we are able to test whether many Australian voters follow their leaders when it comes to climate change policy. Previous researchers have posited leader influences in Australia (e.g. Tranter, 2013), but there is a dearth of research that attempts to establish this association empirically. In broad terms, our aim is to explore the question *do national political leaders influence attitudes on climate change among their respective partisans?*

## 2. Setting

Australia is a valuable venue in which to explore the dynamics of public opinion on climate change for three reasons. First, the environment has played a central role in Australian politics over the past decade. The nation adopted an emissions trading scheme that put it at the forefront of comprehensive responses to climate change but then, after the public reaction to this policy shift played a major role in the Labor government's loss in the 2013 elections, the new Coalition government reversed course sharply (Wanna, 2014). The environment has thus been a highly salient issue for the Australian public.

Second, there is a significant level of partisan polarization overall in the nation (see Jackman, 1998; Goot, 2004; Kousser, 2015a) and on the environment in particular (Tranter, 2013). If leadership cues can accentuate or ameliorate polarization on the environment in a nation where this is already a high-profile and contentious issue, then the results of our survey will likely generalize to other nations in which climate change politics are not yet as salient and party lines are not as hardened.

Third, Australia provides, in current Prime Minister Malcolm Turnbull, a leader of the right-leaning party coalition who has taken progressive stands on climate change. While this has often imperiled his personal power–his positions played a precipitating role in the in-party coup that removed him from power as the Leader of the Opposition in 2009, although did not prevent Turnbull from returning to power as Prime Minister through another party coup in 2016 (Devine, 2010) – it provides a rare opportunity to see how voters in a right-leaning party respond to a leftward signal from one of their leaders on environmental policy.

Australia's recent policy moves on climate change begin in 2007, when Labor Party Leader Kevin Rudd made the creation of an emissions trading scheme (ETS) a centerpiece of the campaign that led to Labor capturing the government in that year's federal election. At that point, the general idea of an ETS, accomplished through a market-based cap-and-trade approach, had bipartisan support, with Coalition Prime Minister John Howard introducing his own plans for an ETS before the election. Howard called climate change, "a great economic challenge for Australia as well as an environmental challenge," (Cole, 2007) while Rudd termed it "the greatest moral challenge of our time." Yet after Rudd's Labor government took power and began to work through the devilish details of a comprehensive plan to reduce greenhouse gas emissions, he began to encounter opposition both on the left and on the right. Some environmental groups and leaders of the Greens Party voiced concerns that Rudd's plan did not go far enough, while internal fissures opened up within the Liberal-National Coalition, out of government and led by new opposition leader Malcolm Turnbull, over whether it went too far. Turnbull supported an ETS and negotiated with the government on its details in 2009, but this left him open to attack within his own caucus, termed the "party room" in Australia.

"We had horrific debates within the party room on climate change in 2009. That was the issue–whether we should have an emissions trading scheme or do direct action instead–that led to Malcolm Turnbull losing the leadership of the party," reports Liberal Party legislator

Andrew Southcott in an interview with one of the authors (Kousser 2015b). When asked whether this was an instance of politicians taking their party in a new direction on an issue, or instead an instance of politicians looking at where the voters were, Southcott replied that, "This was politicians reacting to a groundswell of voters in rural areas who really cared about the economy." With Liberals and National Party constituencies uncomfortable with the direction that Turnbull was leading the Coalition, he faced an internal challenge for the party leadership and eventually lost it to Tony Abbott by a single vote in the "leadership spill" of December 2009. Another Liberal party politician who was in the party room when it unseated Turnbull reported that when it came to the emissions trading scheme, "Malcolm Turnbull had a strong conviction that we needed to take action, and thought he could carry the party with him. But that put his leadership in jeopardy because people were pissed off that he didn't listen to them, that he didn't get the message" (Kousser, 2015c).

After Tony Abbott defeated Turnbull, he turned his sights on stopping Rudd's ETS proposal, deeming it a "great big tax on everything" (Chubb 2014). Just a day after he assumed the Coalition's leadership, Abbott held nearly all of his party's senators together–in alliance with the five Greens senators–to defeat the emissions trading scheme (Farr, 2009). Stymied on the left and the right, and discouraged by the failure of the UN climate summit in Copenhagen to yield a global breakthrough, Rudd eventually shifted his focus away from the ETS in early 2010 (Chubb, 2014). That June, Prime Minister Rudd was defeated in a Labor Party leadership spill by his Deputy Prime Minister, Julia Gillard. She barely defeated Abbot in a snap election in August of 2010, forming a minority government with the support of a Greens senator and three independent MPs. This alliance set the stage for a bolder emissions trading scheme, as well as other concessions to the Greens. According to Bob Brown, the Parliamentary Leader of the Greens at the time, "On Election Night, [Gillard] called me, she needed our votes. Our deal was broader than just environmental issues; it included a new arrangement for Question Time, a national dental health scheme, and a study for high-speed rail. This deal created the world's cutting edge on climate change" (Kousser, 2015d).

Yet the deal did not last long, as Abbott made his opposition to what he called the "carbon tax" a centerpiece of his campaign in 2013, defeating Labor, bringing his Coalition into power, and repealing it in July of 2014. Abbott's time as Prime Minister did not last long, either; Turnbull replaced him in yet another leadership spill in September of 2015. Throughout this period, climate change remained at the center of Australian politics. While leaders often appeared to be courting voters in this policy realm, they also made strategic decisions when they crafted their positions on it and sought to bring voters along with them. Australia moved from a bipartisan consensus to polarization, and dramatically shifted its global role in climate change policy, primarily through the knife's edge vote to replace Turnbull with Abbot in 2009. In the analysis of Senator Penny Wong, Labor's Minister for Climate Change and Water at the time, "The thing that has destroyed bipartisanship and turned this into a rancorous issue has been the conservative hard-liners within the Liberal Party. People can point to mistakes I made, mistakes the Labor Party made, mistakes the Greens made, and there are lots of those, but the fundamental driver of polarization on this has been the hard right of the Liberal Party and the fact that they tore down Turnbull because he did come to an agreement with me, and then they installed Abbott" (Kousser, 2015e).

## 3. Hypotheses

As we laid out in our introduction, two distinct causal mechanisms could lead to the strong connection, observed in countries such as Australia, Great Britain, and the United States, between mass and elite opinion on the environment. Under the office-seeking mechanism that drives Downs' (1957) classic work in political science, opportunistic candidates follow stalwart voters by strategically adopting positions

that put them in line with a large voting bloc. If this is true, mass opinion on environmental policy–especially an issue as salient and high-stakes as climate change–should be unresponsive to cues from elites. When a voter learns what position a party leader holds, this should not affect her own views on the policy. Rather, it will only affect how she judges the leader, with the voter rewarding or punishing the leader based on whether the position fits with her prior preferences. This theory generates an expectation of the null hypothesis in our experiment: if this is the case, then we should not see any treatment effect on our respondents when we let them know about the positions of party leaders.

The second mechanism that could bring mass and elite opinion into alignment is leadership influence. If voters adjust their policy positions on environmental issues based on signals from candidates and office-holders–if public opinion is malleable–then our experiments should reveal significant treatment effects. This could occur through persuasive arguments made by leaders linking specific policies to basic values (see Chong and Druckman, 2007a,b), but prior work has also shown that leaders can move voters simply by adopting positions (Bartels, 2005; Cohen, 2003; Lenz, 2012; Mackie and Cooper, 1984; Brockman and Butler, forthcoming), likely because voters who trust them defer to their policy expertise. This is the mechanism that we test here. While our research design does not rule out the possibility that persuasive arguments could be perhaps even more influential, what we test in these survey experiments is whether simple cues about a party leaders' positions can affect voter attitudes.

In order to generate our hypotheses about how our two types of cues, one about diverging party positions on climate change and one about a bipartisan consensus, will affect polarization in the public, we draw on a foundational theory about how individuals respond to elite positions. In *The Nature and Origins of Mass Opinion*, Zaller (1992) builds on classic work by Converse (1962, 1964) on how voters form opinions, highlighting the central role that leaders play in this process, a role confirmed in more recent works by Berinsky (2009) and Lenz (2012).

Zaller (1992) argues that, rather than possessing a single "true attitude" on policy issues, individuals construct opinions by drawing on the range of considerations that rise to the tops of their heads. Signals from elites play a key role in this process. People build their opinions, according to Zaller, through a "Receive-Accept-Sample" model. First, they *receive* political communications from elites. Second, they choose whether to *accept* those signals or not, selectively deciding whether to accept or resist a signal roughly in proportion to how much it fits with their partisanship or core values. If accepted, the signal becomes internalized as a "consideration." Finally, when asked in a survey to voice their policy opinions, they sample from all of the considerations that are prominent in their mind at the time. Thus, in Zaller's model, opinion will be malleable around an underlying base position–elite cues can influence it, but cues will have the largest effect if they are consistent with an individual's partisanship and policy predispositions.

In our survey, we exert experimental control over whether respondents receive a signal about elite positions or not. Of course, because climate change policy has been such a prominent issue in recent Australian politics, it is entirely possible that some of the respondents in this survey already possessed information about each leader's position. But randomization should ensure that this information will be evenly distributed across our control and treatment groups, meaning that it cannot confound our findings and can only dampen the strength of our experimental signal, leaving us even more confident of the importance of any treatment effects that we observe.

The direction of this treatment effect–the response to the elite signal that our survey respondents receive–should depend on their underlying predisposition to accept it, according to Zaller's (1992) "Receive-Accept-Sample" model. A respondent will be more likely to sample a different opinion if an elite cue comes from a source that is consistent with her own party affiliation or one that fits with her core policy beliefs. The conditional acceptance of elite cues that Zaller demonstrates

in his work generates the "own party influence" hypotheses that we lay out below.

Quite simply, respondents who associate with a party or party coalition in Australia should accept a cue from their own party's leader, while resisting a cue from the opposition party's leader. Labor Party affiliates should move in the direction of Labor Party leader Bill Shorten's positions on environmental policy, when they learn about these positions. Supporters of the Greens Party, a smaller and much more environmentally left-wing group that, nonetheless, often allies with Labor on environmental issues, should also respond to a cue from Shorten. Those who associate with the Liberal Party or the Nationals Party will respond to cues from Prime Minister Tony Abbot, who represented the Coalition composed of those two parties, or to Malcolm Turnbull, the Coalition minister who replaced Abbott as Prime Minister by the time that the latter waves of the AUSSA survey went into the field.

Under the simplest version of our interpretation of Zaller's theory, our "own party influence" hypothesis, people accept signals from their own party's leaders, while resisting and thus ignoring a signal from the other party's leaders. Yet a logical extension of this theory is that a cue from the other party could, in fact, be an informative message that helps individuals take a position–they could react against the policy position favored by the other party's leader. If a respondent knows that she rarely agrees with a leader on the issues, and that leader adopts a clear policy position, this could push the respondent away from the other party's position. This sort of "my enemy's friend is my enemy" logic has been shown by Lupia (1993) to drive voters away from direct democracy propositions endorsed by an interest group that they oppose. Opposition party leaders in Australia could play the same role as unpopular interest groups do in Lupia's work. In this polarized political context (see Goot, 2004; Tranter, 2013 Kousser, 2015a), learning that a Coalition leader favors a policy could push Labor and Greens voters away from it, and vice-versa. We rely on this logic in the "other party counter-reaction" hypothesis that we lay out below.

Drawing upon Zaller's (1992) theoretical framework, applied to climate change opinion through our two specific hypothesis, we can now lay out our expectations about how survey respondents should react to receiving cues about where party leaders stand on environmental policy. We introduce each experiment through the research question that it asks. Our first experiment asks how respondents to the AUSSA will respond to receiving cues about divergent positions taken by leaders, while the second experiment asks how they react to consensus cues. For each, we first lay out the null hypothesis, representing the expectation that Australians hold firm views on these salient issues that will not change simply because they hear that a leader has adopted a position. Then we lay out the expectations under our two alternative hypotheses. We finish our theory section by noting when these hypotheses yield separating predictions, and by laying out implications of these individual-level theories for aggregate partisan polarization on climate change.

### 3.1. Research question 1

Will voters take different positions if they receive a cue that party leaders have reached consensus on a climate change policy?

#### 3.1.1. Null hypothesis

Voters affiliated with a party will not be more likely to adopt the same position as their party's leader when they receive a leadership cue.

#### 3.1.2. Own party influence hypothesis

Voters affiliated with a party will be more likely to adopt the same position as their party's leader when they receive a leadership cue. The supporters of the party upon whose position the leaders converge will be strengthened in their leanings, while the other party's leader will bring some of his or her followers to that position. The treatment will

lead members of both parties to be *more* supportive of the consensus position, but their parallel moves will leave overall polarization unchanged.

#### 3.1.3. Other party counter-reaction hypothesis

Voters affiliated with a party will be more likely to adopt the opposite position from the other party's leader when they receive a leadership cue. The supporters of the party upon whose position the leaders converge will become less supportive of that position when they learn that the other party's leader adopts it, while members of the other party will also move away from it through the same logic. The treatment will lead members of both parties to be *less* supportive of the consensus position, but their parallel moves will leave overall polarization unchanged.

### 3.2. Research question 2

Will voters take different positions if they receive a cue that party leaders diverge on a climate change policy?

#### 3.2.1. Null hypothesis

Voters will not be affected by a leadership cue, with the treatment group taking the same positions as respondents in the control group.

#### 3.2.2. Own party influence hypothesis

Voters affiliated with a party will be more likely to adopt the same position as their party's leader when they receive a leadership cue. As polarized leaders pull their supporters apart in the treatment condition, respondents will become more polarized along party lines.

#### 3.2.3. Other party counter-reaction hypothesis

Voters affiliated with a party will be more likely to adopt the opposite position from the other party's leader when they receive a leadership cue. As polarized leaders push members of the other party away from them in the treatment condition, respondents will become more polarized along party lines.

Our setting allows us to explore both questions, because Australian leaders converged on one major environmental policy and diverged on another. At the time the surveys were administered, both Bill Shorten and Malcolm Turnbull had expressed support for an emissions trading scheme. In this case of bipartisan support, we expect that respondents will exhibit different opinions on emissions trading when they learn about leadership positions, though the direction of the effect will depend upon whether voters' adherence to their own party's leader is stronger than their counter-reaction to the position of the other party's leader. By contrast, we have clear expectations about how respondents will react when they receive a divergent cue. During our study, a clear political division was apparent between Labor (represented by Bill Shorten), which supported maintaining the renewable energy target (RET), and the Liberal and National party coalition partners (represented by Tony Abbot), which favored reducing the target. There is a potentially confounding factor relating to our survey question on the renewable energy target, where Tony Abbott is named as Prime Minister. Mr. Abbott was Prime Minister from 18 September 2013 until September 15, 2015 until deposed by Malcolm Turnbull. Data in the 2015 Australian Survey of Social Attitudes were collected between August 17, 2015 and April 14, 2016, so for approximately the first month of data collection, Tony Abbott was Prime Minister, while for the remainder of the collection period Malcolm Turnbull held the top job. Tony Abbott was very unpopular during his term as PM, particularly toward the end of his leadership. Yet even though Abbott was unpopular, his rejection of an RTS likely to have resonated with many coalition voters who viewed support for the renewable energy target as poor policy that would hinder economic growth. We suspect that if the leadership change from Tony Abbott to Malcolm Turnbull is a confounding factor, Abbott's unpopularity may have attenuated the leader

effect we detected on our RTS measure, such that the magnitude of the effect we detected is a conservative estimate.

We expect that learning about this disagreement between major party leaders will influence environmental attitudes. In this case, we expect Labor and coalition partisans to be *more* polarized in their attitudes toward the RET when they learn about the leaders' positions, either because they move toward their own party's policy view or because they move away from the other party's position.

It is important to note that in our divergent cues experiment, both the own party influence hypothesis and the other party counter-reaction hypothesis yield the same empirical prediction, but through different mechanisms. A divergent cue may pull voters from each party to the extremes as they follow their own leaders, or learning about the other party may push voters away from the other side. Increased polarization along party lines is the result of either mechanism. But in the convergent cues experiment, these forces point in different directions. The convergence cue could attract members of both parties toward the position that both leaders converge upon, or their positions could repel members of both parties away from that position through a counter-reaction. Positions will shift but overall polarization will be unchanged in both of these scenarios.

## 4. Method

We employ a split sample experimental design using data from the 2015 Australian Survey of Social Attitudes (AuSSA). The AuSSA is a mail-out, mail-back survey based upon a sample systematically selected from the Australian Electoral Roll, with 5000 questionnaires administered and 1211 completed questionnaires returned (317 were ineligible as not at address or deceased), resulting in an AAPOR Response Rate 1 of 25.8 percent. The AuSSA respondents approximate 'voters' because with the Australian system of mandatory voting, almost all of the respondents to the 2015-16 AUSSA reported voting in the last national election (94% voted; 3% did not vote and 3% were ineligible at the last election). All estimates are based upon weighted data, using a weight variable provided with the AuSSA. The weight variable adjusts the AuSSA data to reflect proportions in the 2011 Australian census on the basis of working status, age and sex (Blunsdon, 2016).

Survey participants were randomly assigned two different AuSSA questionnaires. One sub-sample of respondents were mailed questionnaires containing survey items that named national political leaders, outlining the policy positions espoused by party leaders. The remaining respondents received identical questions with no mention of the leaders. The two sets of questionnaire items over which we exerted experimental control are of interest for our research. The first (1A and 1B below) relate to a proposed emissions trading scheme (ETS).

### 4.1. Leadership consensus cue

Questions 1A and 1B were designed to measure the influence of *consensus* leader positions on a climate change related issue.

Question 1A. (without cue) 'We would like to know what you think about the proposal to create an emissions trading scheme in order to reduce greenhouse gas emissions. Do you support or oppose this proposal?'

Question 1B. (with cue) "We would like to know what you think about the proposal to create an emissions trading scheme in order to reduce greenhouse gas emissions. Both Labor Party leader Bill Shorten and Liberal Party Minister Malcolm Turnbull have favored this approach. Do you support or oppose this proposal?'

The response categories for both questions were 1. Support the proposal; 2. Oppose the proposal. The consensus cue dependent variable scores 'support' as 0 and 'oppose' as 1 for binary logistic regression analyses.

### 4.2. Leadership divergence cue

We also included an item designed to measure the influence of national leaders upon partisans when the leaders were divided over a climate related policy.

Question 2A. (without cue) "Australia's Renewable Energy Target sets a goal for the amount of power that will be supplied through solar, wind, and other renewable resources by the year 2020. There have been recent proposals to reduce this target, relying less on renewable resources in order to keep power costs low. What is your position on this policy?"

Question 2B. (with cue) "Australia's Renewable Energy Target sets a goal for the amount of power that will be supplied through solar, wind, and other renewable resources by the year 2020. Labor Party leader Bill Shorten has supported keeping this target at its current level, while Tony Abbott's Coalition government have proposed a reduced target, relying less on renewable resources in order to keep power costs low. What is your position on this policy?"

The response categories for questions 2A and 2B were: 1. Keep the renewable energy target at its current level; 2. Reduce the renewable energy target. The divergence cue dependent variable scores 'reduce' as 1 and 'retain' as 0 for binary logistic regression analyses.

As an omnibus social attitude survey, the AuSSA also contains other data relevant to our analysis, including questions on political partisanship and demographic questions from which we derive our independent variables. The political party identification question that appears in the AuSSA is 'Do you usually think of yourself as close to any particular political party and, if yes, which party is that?' (Responses: Labor Party [ALP]; Liberal Party; National [Country] Party; Greens; No party affiliation; Other party [please specify]).

After analyzing the experimental effect of leadership cues, we estimate multivariate models in order to leverage the broader data available in this survey. Four models are presented for our binary logistic regression analyses. The first estimates the influence of leaders (i.e. Leaders Cue) on partisan attitudes. The second model adds a party identification scale that is scored 1 Greens 2 Labor; 3 no party affiliation; 4 Coalition party identification and centered at the mean. Model 3 adds an interaction term for the political party ID scale by Leader Cue variable. Finally, Model 4 controls for attitudes toward anthropogenic climate change ('Climate change is happening now and is mainly caused by human activities' scored 1; other responses scored 0). Appendix Table A3 contains Pearson's correlations for the dependent and independent variables.

We control for sex and age in regression analyses as these have been found to influence attitudes toward climate change in Australia (Tranter, 2011, 2017; Fielding et al., 2012). We use binary logistic regression to analyse our binary dependent variables. This approach enables a more precise examination of question wording effects by reducing overall estimation errors and by holding constant characteristics that could still slightly vary across the treatment and control groups, even after randomization.

## 5. Results

Our central findings are that: (1) Consistent with prior research in a range of nations (see Wood and Vedlitz, 2007; Jacques et al., 2008; McCright, 2010, McCright and Dunlap, 2011; Hamilton, 2011, Poortinga et al., 2006; Tranter, 2011, 2014, 2017; Fielding et al., 2012; Hamilton et al., 2015; Tranter and Booth, 2015), public opinion on key climate change issues in Australia is strongly polarized along party lines. Those who affiliate with the coalition of the Liberal and the Nationals Parties are much less supportive of emissions trading schemes or renewable energy targets than voters affiliated with the Labor or especially the Greens. (2) When survey respondents are exposed to a cue reporting that party leaders diverge in their positions, this polarization along partisan lines is accentuated. When they learn, by
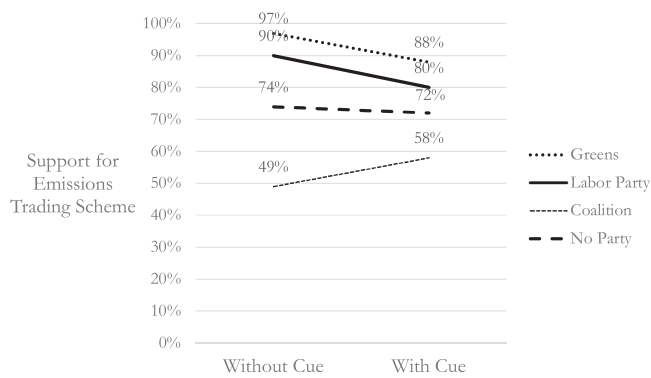
Fig. 1. The Impact of Leader Consensus Cues.

contrast, that leaders converge, those who affiliate with opposing parties take positions that are closer together. (3) The impact of the leadership cue can sometimes be attributed to voters adopting their own party leaders' positions, but in other cases appears to be counter-reaction in which they take positions that set them apart from the other party's leaders.

We begin by presenting the results graphically, then move to full multivariate tests. All analyses are based on weighted data. Appendices Tables A1 and A2 provide additional detail on the exact results of the bivariate effects we present in Figs. 1 and 2, included Fischer's exact tests. Those tests show, and the figures graphically display, that–when no cues are given–survey respondents take very different positions on these environmental policies based on the parties that they support. Labor and Greens affiliates strongly favor the renewable energy target and emissions trading scheme, while voters in the Liberal-Nationals coalition are less supportive. The differences between these two sets of parties in the absence of a cue are significant at the 95% confidence levels. They are also consistent with the general alignment of Greens, Labor, and coalition voters along the left-to-right ideological spectrum for a broad range of policy areas reported in Kousser (2015a).

In the critical test of our convergence hypothesis, the results in Fig. 1 also suggest that coalition identifiers are more supportive of an emissions trading scheme when they learn that leaders of both parties agree on that scheme. When federal Labor Opposition Leader Bill Shorten and coalition Minister (later Prime Minister) Malcolm Turnbull are named as supportive of the emissions trading scheme, 58% of coalition identifiers support the scheme, compared to 49% when leaders are not mentioned. The percentage difference among coalition identifiers between the samples supports our hypothesis that political leaders influence climate change attitudes. These voters move in the direction predicted by the "own party influence" hypothesis.

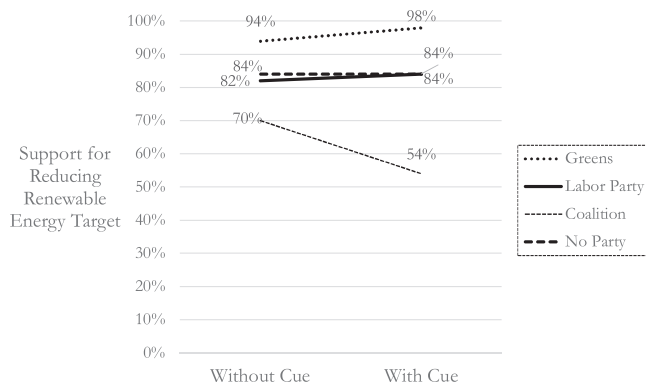However, in contrast to coalition supporters, Labor and Greens



Fig. 2. The Impact of Leader Divergence Cues.
Notes: Both figures report data from survey experiments, with 1147 valid observations (for Fig. 1) and 1099 valid observations (for Fig. 2).

identifiers were *less* likely to support an emissions trading scheme when political leaders were named in support of the question on emissions trading. Australians who identify with the Labor party were twice as likely to oppose an emissions trading scheme (20%) under a consensus position between party leaders, compared to where they were not named (10%). Support among Greens identifiers also declines by eight percentage points. While this finding is at first glance surprising, the effect among Labor and Greens is consistent with the "other party counter-reaction" hypothesis. For respondents who did not learn of the leader's positions, support for the emissions trading scheme was exceptionally high (97% among Greens and 90% among Labor identifiers). Hearing that Bill Shorten supported the scheme could not increase the level of support in the treatment group by much, since there was hardly any room for an increase. But it appears that learning that the scheme was supported by Malcolm Turnbull led left-wing respondents to conclude that it was not as environmentally progressive as they might have thought, leading some to oppose what looked–through the lens of leadership cues–like a centrist proposal.

It also comforting to note that learning about the leadership cues had no impact on the views of survey respondents who professed no party affiliation. These voters act as a "placebo group" in our experiments because they should not be influenced by the cues. In both survey experiments, support for environmental policies was virtually identical among the treatment and control groups for this "No Party" voters. The fact that such voters did not respond to cues from leaders whose parties they feel no allegiance to is perfectly consistent with Zaller's (1992) theory that voters who receive a signal only accept it if it falls in line with their existing partisan affiliations or other values. With no partisan affiliations, these voters were unmoved by cues from party leaders.

Fig. 2 shows leader cue effects on responses to the question on the renewable energy target for 2020. In this instance, the Prime Minister at the time the survey was administered (Tony Abbott) favored reducing the renewable energy target, while the Opposition leader (Bill Shorten) favored leaving the target unchanged. There was therefore a clear political divide between the major party policy platforms over this issue.

The results here indicate that coalition party identifiers were far less likely to favor retaining the RET when leaders were named (54%) compared to when leaders' names were not mentioned (70%). This is in line with our hypothesis that leader divergence influences partisans, either through the own party support or the other party counter-reaction hypotheses (both of which point in the same direction in this experiment. The effect is stronger among coalition identifiers that it is among Labor or Greens partisans on this question. Support among Greens is four percentage points higher, and Labor support is two points higher, when these voters learn that Shorten favors and Abbott opposes retaining the RET.

### 5.1. Multivariate analyses

We model two dichotomous dependent variables. The first contrasts those who oppose an emissions trading scheme with supporters of the scheme. It is based on the question "We would like to know what you think about the proposal to create an Emissions Trading Scheme in order to reduce greenhouse gas emissions. Do you support or oppose this proposal?" with support scored as 0 and opposition as 1. The model reported in Table 1 examines the influence of a consensus cue in the multivariate case. "Leaders Cue" is a dummy variable scored 1 for the sub-sample where leaders were named and 0 in the sample where leader names were omitted. For Table 1, the question presented both leaders (Shorten and Turnbull) as supportive of the ETS. We expect that with bipartisanship among leaders (i.e. leaders are named), partisan differences on the ETS should be attenuated, compared to when leader names are omitted from the survey question.

Of most interest here is the interaction result. The results for this variable tests our first research question, whether voters take different positions if they receive a cue that party leaders have reached consensus

**Table 1**

Consensus Cue 'We would like to know what you think about the proposal to create an Emissions Trading Scheme in order to reduce greenhouse gas emissions. Do you support or oppose this proposal?' Support = 0; Oppose = 1 (odds ratios).

Source: Australian Survey of Social Attitudes (2015) Data are weighted.

| Model | 1 | | 2 | | 3 | | 4 | |
|---|---|---|---|---|---|---|---|---|
| | OR | p | OR | P | OR | P | OR | P |
| Men | 1.8 | (< .0001) | 1.8 | (< .0001) | 1.8 | (< .0001) | 1.5 | (.009) |
| Age (years) | 1.022 | (< .0001) | 1.016 | (< .0001) | 1.016 | (.001) | 1.011 | (.024) |
| Leaders Cue | 1.1 | (.627) | 1.1 | (.619) | 1.2 | (.251) | 1.1 | (.454) |
| Party ID scale | – | – | 2.08 | (< .0001) | 2.69 | (< .0001) | 2.07 | (< .0001) |
| Interaction (Party ID * Cue) | – | – | – | – | 0.6 | (.016) | 0.7 | (.070) |
| Believe ACC is occurring | – | – | – | – | – | – | 0.2 | (< .0001) |
| N | (1009) | | (1009) | | (1009) | | (1001) | |

Notes: analysis restricted to Greens, Labor, Coalition and No Party identifiers. Party ID scored 1 Greens; 2 Labor; 3 No Party; 4 Coalition, and centered at the mean. Other party identifiers excluded.

on a climate change policy (i.e. convergence model, Table 1, Model 3). The interaction variable allows different partisans to move in different directions and measures the overall impact of leadership cues on partisan polarization. Political party identification is measured as an ordinal variable (Greens = 1; Labor = 2; No party = 3; Coalition [Liberals + Nationals] = 4). We also examined models where party identification was measured with dummy variables, yielding substantively similar results. Similar to Hamilton et al. (2015), we use the more parsimonious party identification ordinal variable as we are interested in modelling leader cue interactions across the party identification gradient, as opposed to contrasting individual parties.

The party ID * leader cue interaction term is statistically significant (p = .016), with an odds ratio of 0.6 indicating an average 60 per cent *decrease* in opposition to an emissions trading scheme across the levels of the party identification variable. The main effect for political party identification are statistically significant (p < .0001) with an odds ratio of 2.69. This indicates an increase of 2.7 times the odds of opposing an emissions trading scheme for a unit change on the party ID scale (i.e. moving from Greens to Labor, to No party to Coalition). The results are represented visually in Fig. 3, where the probability of opposing an emissions trading scheme increases for the Greens and Labor and slightly for the politically non-aligned, but is reduced for Coalition identifiers under conditions of leadership convergence. After controlling for climate change attitudes in Model 4, the party ID by leader cue interaction is just short of significance (p = .070). The magnitude of the odds ratios for climate attitudes indicates believing that anthropogenic

climate change is occurring substantially reduces opposition to an emissions trading scheme, although strong partisan main effects remain. Controlling for age and sex, the leader cue variable does not exceed statistical significance at the 95% level in any of the models. However, note that this coefficient–which would only be significant if all voters moved in the same direction no matter which party they identified with–does not constitute the main test of our hypotheses, which predicts different effects for different partisans.

In Table 2, we model a different scenario, the influence of divergence between national leaders over a policy designed to attenuate climate change, the renewable energy target. These analyses test our second research question, whether voters take different positions if they receive a cue that party leaders diverge on a climate change policy? In this case, our dependent variable measures if Australians prefer retaining the RET (scored 0) or reducing the target (scored 1). Here the leaders cue variable measures the influence of leaders where there is divergence between the major parties over climate policy.

The divergence model (i.e. Table 2, Model 3), shows the party ID * leader cue interaction term is statistically significant (p .016), with the odds ratio 1.6 indicating an average 60 per cent increase in support for reducing the renewable energy target across the party identification variable. This pattern is represented visually in Fig. 4, where the probability of reducing the renewable energy target is slightly lower for Greens and Labor when there are diverging leader cues, slightly higher for non-partisans, but considerably higher for coalition identifiers under conditions of divergence. The main effects for political party identification are statistically significant (p < .0001) with the odds ratio of 1.53 suggesting an increase of 53 per cent in the odds of reducing the renewable energy target for a unit change in party ID. Further, controlling for believing in the veracity of anthropogenic climate change does not reduce the significance of the party ID * leader cue interaction. In fact, Model 4 suggests a slightly stronger effect (OR 1.9; p = 0.004) for the interaction term after holding climate change attitudes constant, suggesting this is a robust finding.

## 6. Conclusion

To explore the effect of leadership cues on public polarization on climate change issues, we conducted a survey experiment using the 2015 Australian Survey of Social Attitudes (AuSSA). Respondents were randomly assigned either to receive cues about the positions of party leaders on climate policies or not to receive them, allowing us to identify the causal impact of leadership cues (see Schuman and Bobo, 1988; Sniderman and Grob, 1996) on attitudes toward climate change policy. We cannot definitively rule out the possibility that politicians strategically adopt policy positions that conform to the positions of voters. However, by evaluating whether voters are responsive to elite cues in this realm, we test for a critical and necessary assumption of the theory that, in environmental politics, party polarization is
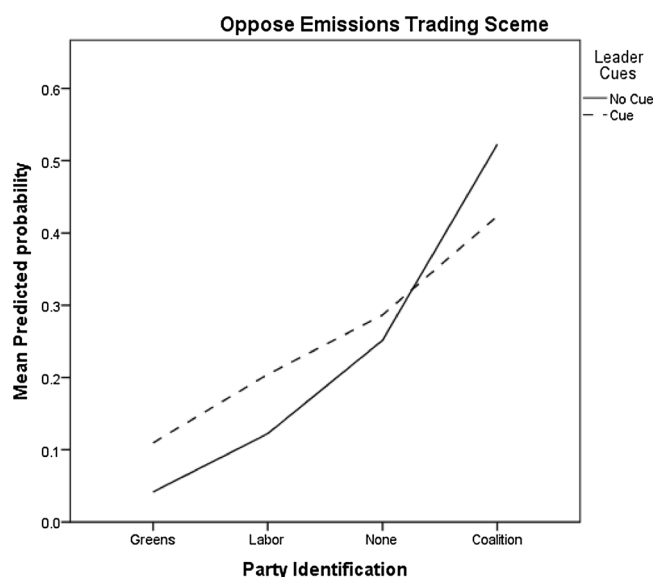
**Fig. 3.** Leader Consensus Interactions (Table 1, Model 3).

**Table 2**
Divergence Cue 'Australia's Renewable Energy Target sets a goal for the amount of power that will be supplied through solar, wind, and other renewable resources by the year 2020. What is your position on this policy?' Reduce = 1; Retain = 0 (odds ratios).
Source: Australian Survey of Social Attitudes (2015) Data are weighted.

| Model | 1 | | 2 | | 3 | | 4 | |
|---|---|---|---|---|---|---|---|---|
| | OR | p | OR | P | OR | P | OR | P |
| Men | 1.3 | (.077) | 1.3 | (.085) | 1.3 | (.065) | 1.1 | (.463) |
| Age (years) | 1.017 | (< .0001) | 1.011 | (.021) | 1.012 | (.016) | 1.008 | (.117) |
| Leaders Cue | 1.3 | (.113) | 1.3 | (.102) | 1.1 | (.461) | 1.1 | (.515) |
| Party ID scale | – | – | 1.97 | (< .0001) | 1.53 | (.003) | 1.22 | (< .187) |
| Interaction (Party ID * Cue) | – | – | – | – | 1.6 | (.016) | 1.9 | (.004) |
| Believe ACC is occurring | – | – | – | – | – | – | 0.3 | (< .0001) |
| N | (1002) | | (1002) | | (1002) | | (993) | |

Notes: analysis restricted to Greens, Labor, Coalition and No Party identifiers. Party ID scored 1 Greens; 2 Labor; 3 No Party; 4 Coalition, then centered at the mean. Other party identifiers excluded.
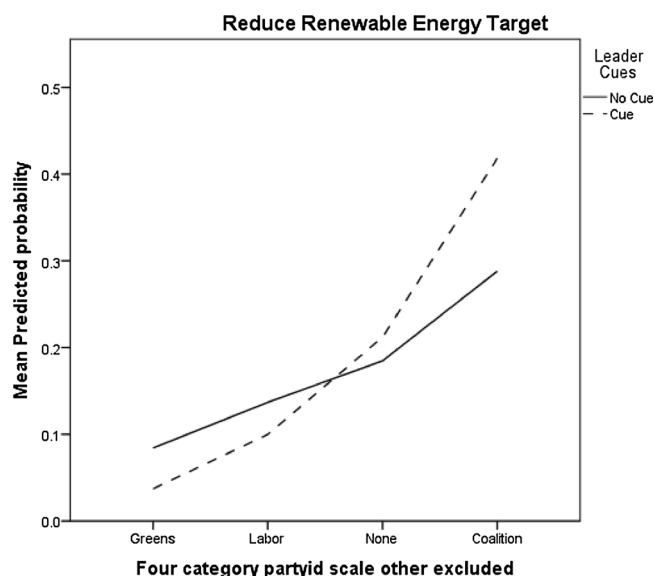


**Fig. 4.** Leader Divergence Interactions (Table 2, Model 3).

strengthened by voters following their leaders. While previous researchers posited leader influences in Australia (e.g. Tranter, 2011, 2013), we demonstrate this association empirically, finding national political leaders do influence partisan attitudes, with Australian voters following their party leaders when it comes to global climate change policies.

Our research design allows us to discover whether partisan polarization is a fixed and inevitable feature of environmental politics. If divergent leaders can pull their electoral bases apart from each other on controversial policies, polarization is not inescapable. Malleable voters will follow their leaders in any direction; if elites reach a consensus, their supporters could also converge toward the center, promising a path out of gridlock on critical questions of environmental policy. Once informed of the positions party leaders took on two hotly debated climate related policies, survey respondents adopted positions that were substantively and statistically different to those made by the voters who did not receive cues. When leaders express divergent positions, voter polarization increases. However, under conditions of elite consensus, voter polarization decreases. The implications for policy action on climate change are important, as these findings suggest agreements between party leaders may help overcome gridlock on climate policy.

Public opinion about addressing climate change, we show, is not immutable. What implications does this finding hold for the future direction of policy change in this critical area? Departing from the same starting point as important research by Guber (2013) and by McCright

et al. (2014) on partisan sorting, our findings may suggest a brighter policy future. Guber (2013, 109) writes that "partisan conflicts are not inherent in the subject of climate change. Party sorting seems to occur only as citizens acquire information and become familiar with elite cues. Unfortunately, it also means that the well-intentioned efforts of [Al] Gore and others on initiatives such as WeCanSolveIt.org and the Climate Reality Project—which are predicated on the assumption that awareness generates concern—may ultimately fall flat." We agree that left-wing leaders may not be able to shift the views of conservative voters, but show that conservative leaders may indeed have that power. Now that he has unseated Tony Abbott as Australia's Prime Minister, Malcolm Turnbull may be able to move members of his Coalition toward different environmental stances. Other leaders might follow the example of Arnold Schwarzenegger; when he served as the Republican governor of California, his embrace of a bill setting aggressive targets to reduce greenhouse gas emissions helped to secure his reelection and changed environmental politics across the states (Chandler and Kousser, 2007). He demonstrated that a member of his party could survive, and indeed reap electoral rewards, for taking an environmentalist stance. Our results suggest that one reason he was so successful is that he may have persuaded some Republican voters to follow him rather than simply to tolerate his bold policy move.

Elected officials are certainly not the only source of elite cues that voters receive in today's politics. Media reports and campaign messages remain critical parts of the modern information environment, and the 2016 presidential election in the United States laid bare just how polarized and polarizing media outlets such as Breitbart News can be. The findings of Carmichael et al. (2007, 611) "point to the powerful role that partisan media plays in reinforcing and strengthening opposition or support of climate change action. This would imply that to have appreciable shifts in aggregate public concern over climate change, the level, nature, and audience reach of media coverage would need to significantly shift (Carmichael et al., 2017, 611)." Our results do nothing to challenge the importance of the media, and many prominent media members could be thought of as "elites" on a par with elected officials. What we do show is that even if this fractured and polarized media environment, politicians' messages can still exert powerful effects to either divide or unite their followers.

Public opinion on environmental policy may inform and constrain leaders, but it does not dictate their positions or their policymaking options. Today, viewpoints on the environment are highly polarized along party lines in the United States (Wood and Vedlitz, 2007; Jacques et al., 2008; McCright, 2010; McCright and Dunlap, 2011; Hamilton, 2011, Guber, 2013, McWright et al., 2014; Hamilton et al., 2015, Carmichael et al., 2017), Great Britain (e.g. Poortinga et al., 2006), Australia (e.g. Tranter, 2011, 2014, 2017; Fielding et al., 2012) and elsewhere (Tranter and Booth, 2015). On the other hand, as Hamilton (2017) shows, there has been a gradual increase in acceptance of

climate change in the United States over the past seven years. Neither dynamic of public opinion, we would argue, guarantees a future policy direction. Leaders can influence public opinion, giving them the electoral leeway to make dramatic policy shifts. Recent years have seen Australia change the direction of its approach to global climate change and the United States, under President Trump's leadership, move away from the Paris Agreement. Yet the next leader of each nation may shift directions again, bringing along his or her followers. No victory in this policy realm is secure, we have seen, but our results also suggest that no loss is forever. Whether public opinion on the environment remains polarized or moves toward a consensus is up to both voters and leaders.

## Acknowledgments

## Appendix A

**Table A1**
Consensus Cue 'We would like to know what you think about the proposal to create an Emissions Trading Scheme in order to reduce greenhouse gas emissions. Do you support or oppose this proposal?' (per cent).

| | All | | Coalition | | ALP | | Greens | | No Party ID | |
|---|---|---|---|---|---|---|---|---|---|---|
| Leaders | No cue | Cue | No cue | Cue | No cue | Cue | No cue | Cue | No cue | Cue |
| Support | 69.9 | 70.6 | 49.0 | 57.9 | 89.3 | 79.6 | 96.9 | 88.4 | 74.1 | 71.6 |
| Oppose | 30.1 | 29.4 | 51.0 | 42.1 | 10.7 | 20.4 | 3.1 | 11.6 | 25.9 | 28.4 |
| N | (600) | (547) | (155) | (152) | (112) | (98) | (32) | (43) | (239) | (201) |
| 2 sided Fischer's Exact P | .791 | | .137 | | .057 | | .213 | | .591 | |

**Table A2**
Divergence Cue 'Australia's Renewable Energy Target sets a goal for the amount of power that will be supplied through solar, wind, and other renewable resources by the year 2020' What is your position on this policy? (per cent).

| | All | | Coalition | | ALP | | Greens | | No Party ID | |
|---|---|---|---|---|---|---|---|---|---|---|
| Leaders | No cue | Cue | No cue | Cue | No cue | Cue | No cue | Cue | No cue | Cue |
| Retain | 79.8 | 76.1 | 69.9 | 54.3 | 82.4 | 84.2 | 93.8 | 97.7 | 83.5 | 84.3 |
| Reduce | 20.2 | 23.9 | 30.1 | 45.7 | 17.6 | 15.8 | 6.3 | 2.3 | 16.5 | 15.7 |
| N | (585) | (514) | (155) | (152) | (119) | (101) | (32) | (43) | (237) | (197) |
| 2 sided Fischer's Exact P | .144 | | .007 | | .857 | | .572 | | .896 | |

**Table A3**
Dependent and Independent variables (Pearson's correlations).

| | Oppose ETS | Reduce RET | Men | Age | Leader Cue | Party ID | ACC Happening |
|---|---|---|---|---|---|---|---|
| Oppose ETS | 1 | | | | | | |
| Reduce RET | .35** | 1 | | | | | |
| Men | .15** | .07* | 1 | | | | |
| Age | .17** | .13** | .02 | 1 | | | |
| Leader Cue | .008 | .05 | −.02 | .003 | 1 | | |
| Party ID | .27** | .23** | .03 | .20** | −.002 | 1 | |
| ACC Happening | −.48** | −.31** | −.16** | −.17** | −.006 | −.27** | 1 |

Notes: *$p < .05$; **$p < .01$.

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